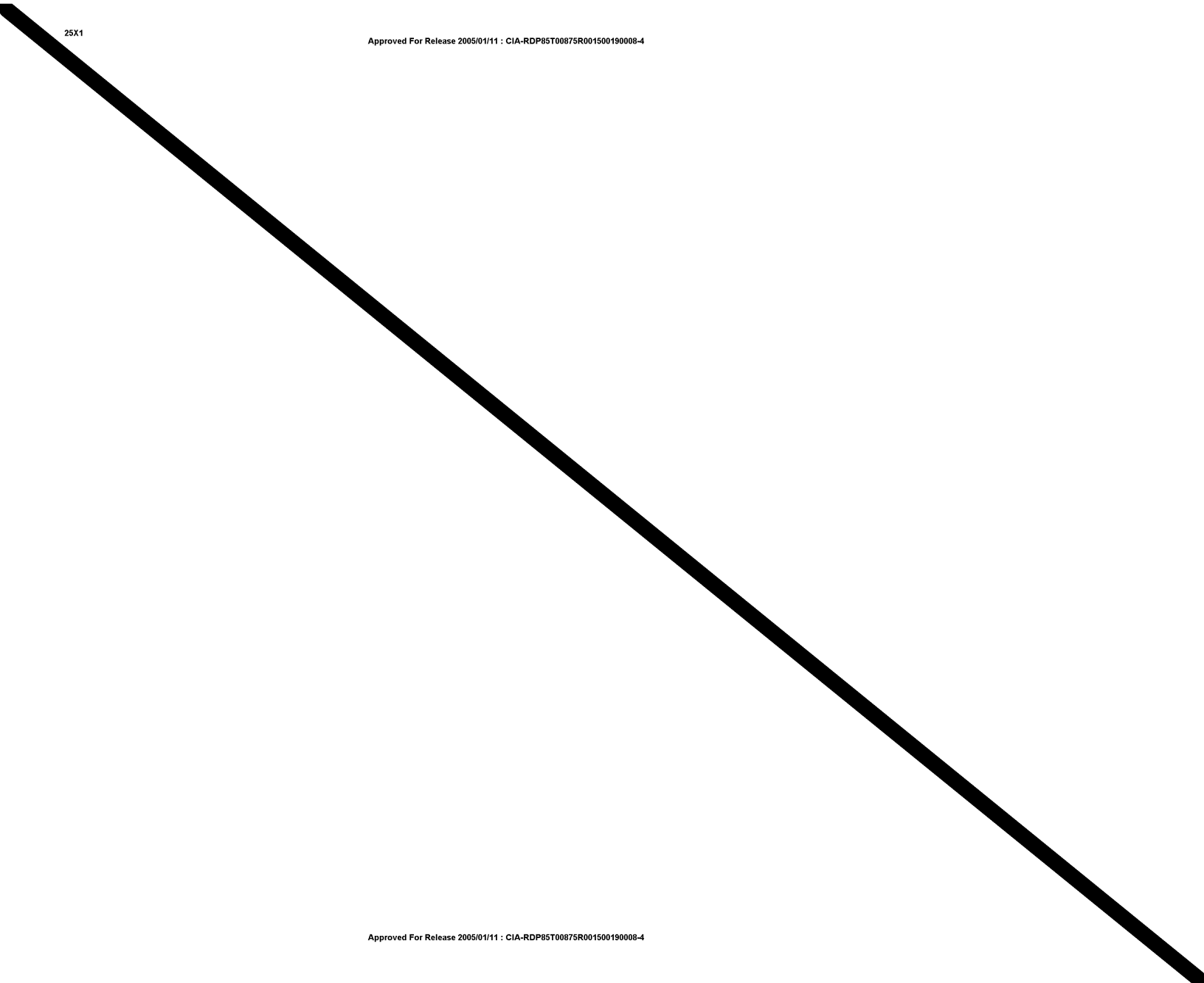

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence

Outlook for the 1973 Soviet Grain Harvest as of Mid-August

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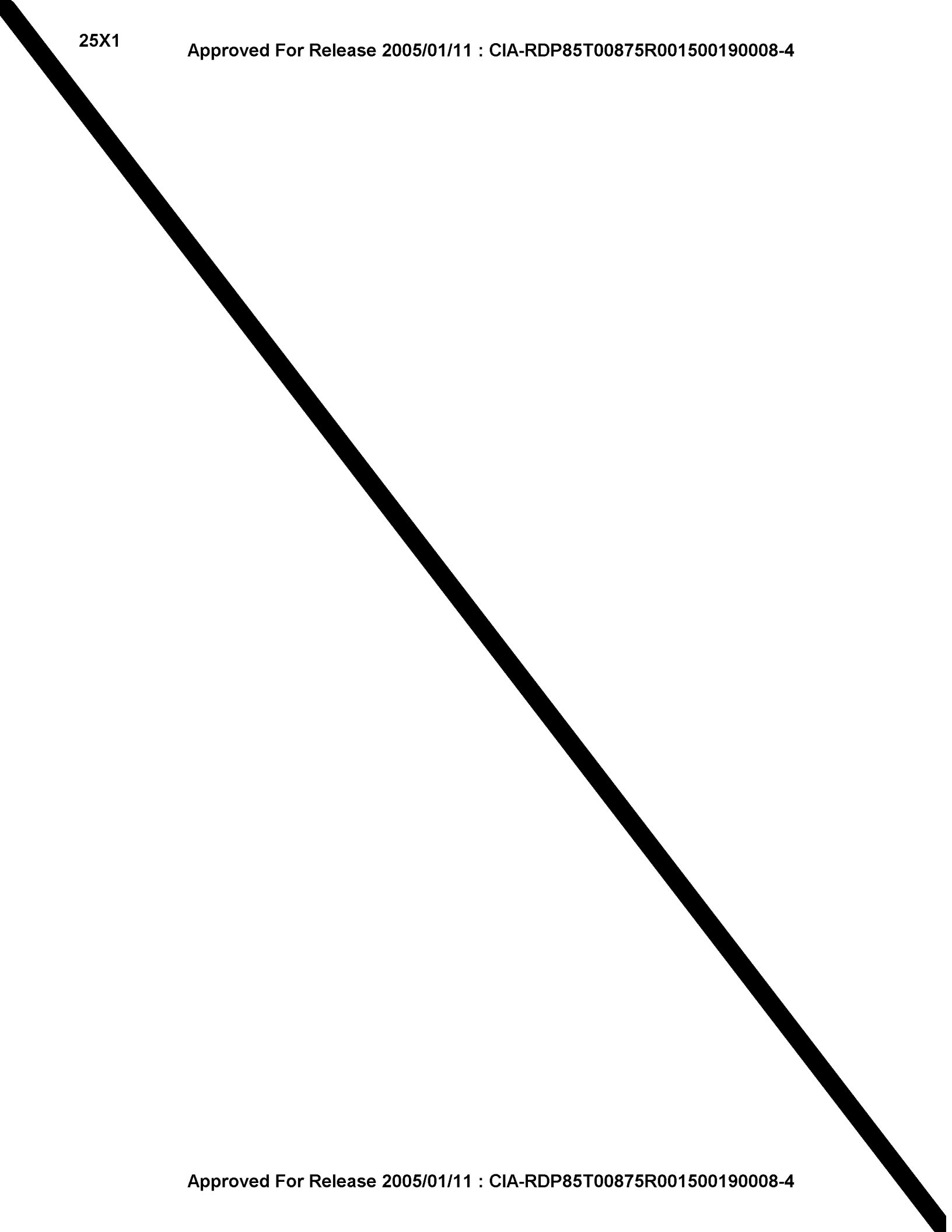

OUTLOOK FOR THE 1973 SOVIET GRAIN HARVEST AS OF MID-AUGUST

Despite slower than normal harvest progress, a record Soviet grain crop of 155 million to 160 million metric tons of usable grain is now likely. Ideal weather and average harvest losses are needed to reach the higher figure, whereas the lower figure will result if less than ideal conditions cause:

(a) direct harvesting losses of 10% to 15% on the 10 million to 15 million hectares of lodged grain in the European USSR and

(b) more than moderate losses in harvesting grain that is overripe because of delayed harvesting.

The harvest could, however, still fall below the lower end of this range. Harvesting operations in the western USSR, slowed by lodged grain and wet weather, could lead to higher than expected losses. By 13 August, 40½% of the total grain area had been threshed, compared with an average of 44½% in 1970-72. In addition, excess moisture and weediness of stored grain could result in a sharp reduction in availability of milling quality wheat.

Even with the predicted record harvest, imports of 11 million to 16 million tons of grain will be needed to meet export requirements and domestic demand. If the harvest reaches 160 million tons, the grain already purchased this year plus deliveries of grain bought last year will satisfy the minimum Soviet requirement until next August. Additional imports will be required if the harvest is less than 160 million tons or should the Soviets decide to increase grain reserves, which are now minimal.

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Note: Comments and queries regarding this publication are welcomed. They may be directed to [redacted] of the Office of Economic Research,

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Recently, the Soviets tempered earlier statements that they would make no further grain purchases from the United States through 1975. They now claim to have stopped buying US grain only temporarily to ease the pressure on the US market. In this connection, they have reduced the amount of corn contracted for this fiscal year by more than 1 million tons, moving it into FY 1975.

The Soviets have already indicated interest in additional purchases in Canada, Australia, and France. The Canadians agreed to supply no more than 4 million tons of grain during FY 1974. Other exporting countries may be similarly reluctant to commit much of their crop to the USSR until their exportable surplus is known.

Discussion

Status of the Grain Crop

1. Weather conditions through June in the western USSR fostered the development and early ripening of both winter and spring grains. The wetter than normal weather that prevailed throughout July and early August, however, has hampered efforts to gather the harvest.

2. During the first two weeks of July, heavy rains and winds flattened, or lodged, grain in large areas of the Ukraine, Belorussia, Moldavia, and the North Caucasus (see the map). An estimated 10 million to 15 million hectares, or 8% to 12% of the 120 million hectares sown to grain, were affected.[1] In most areas a two-stage method of harvesting -- whereby the grain is cut and raked into swaths and then threshed at a later date -- is being used to reduce the losses associated with lodging. In some extreme cases, farmers and residents of nearby towns are being equipped with "sickles and waterproof clothing" to bring in the harvest by hand.

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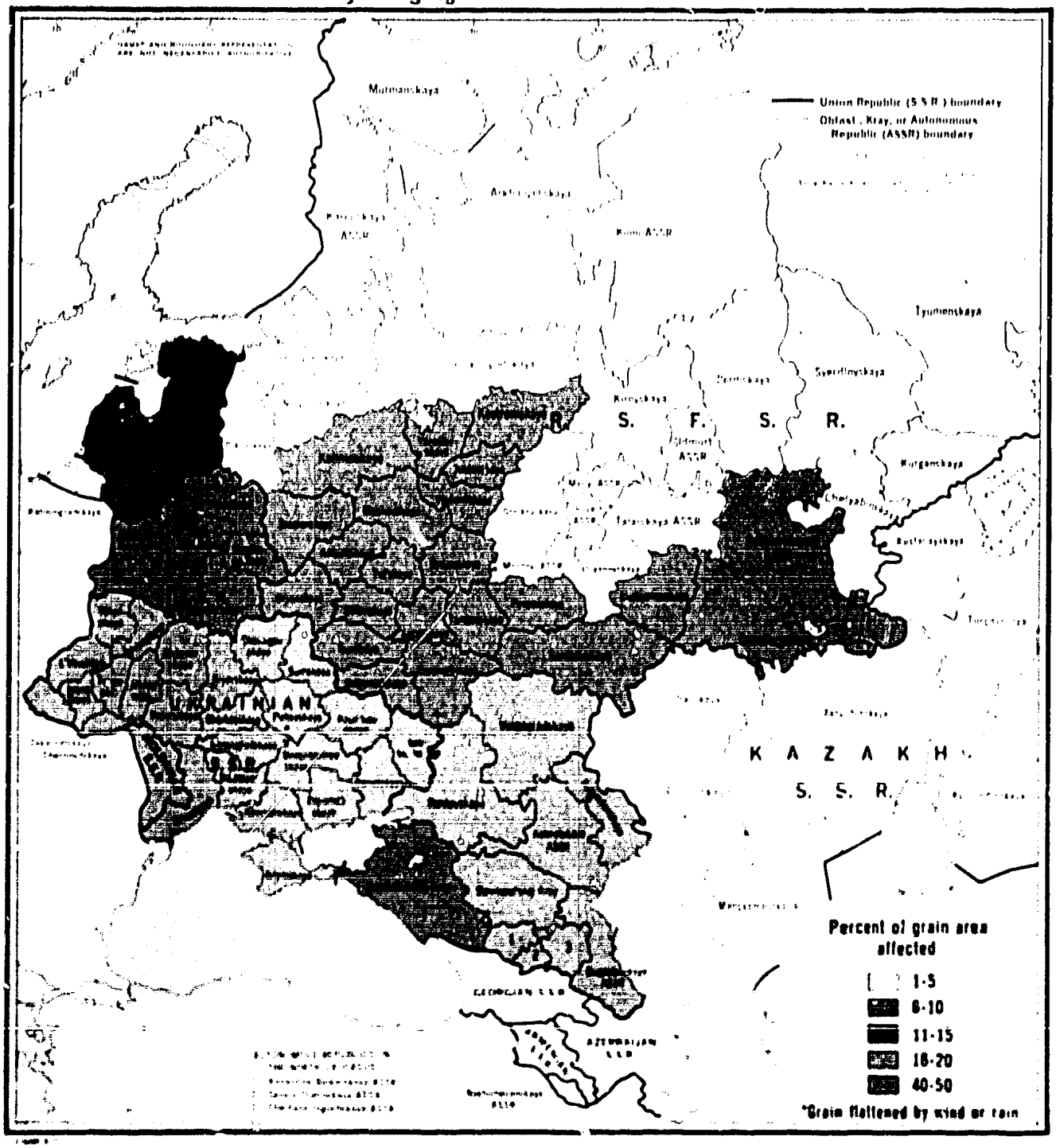
USSR: Grain Area Affected by Lodging*



3. These measures, and continued frequent rains, are causing the harvest to proceed more slowly than usual (see Table 1). By 13 August, about 40½% of the grain area had been threshed, compared with an average of 44½% during the past three years. Because both winter and spring grains ripened from 5 to 10 days earlier than usual in most of the southern European USSR, this slowdown in harvest operations is likely to increase losses.[2]

4. The rainy conditions which caused widespread lodging have also promoted the growth of weeds. In the Ukraine, "weeds appear on fields where they haven't shown up for years." As a result, owing to an above-normal content of weed seeds, the moisture level of the harvested grain is increased.[3] Similar problems arise in grain that has been left lying in swaths under wet conditions. Efforts to ease this situation are hampered by a lack of grain dryers in the southern European USSR, an area not usually troubled by wet grain. The need to properly dry grain before storage is critical, however. Under such damp conditions "storage mold" can develop, making the affected grain unsuitable for food or fodder.

5. If the above types of potential losses in some areas can be either avoided or held to moderate levels, a record grain crop is expected in much of European USSR. Early reports in the Soviet press tout record and near-record yields throughout much of the harvested area. These reports substantiate earlier estimates

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6. A markedly different situation has developed east of the Ural Mountains, in the principal spring grain areas. Here potential yield prospects are

2. According to Soviet scientists, yields are reduced by roughly 6% and 10% owing to shattering of the over-ripened grain when harvesting is delayed by 5 and 10 days, respectively.
3. Because of heavy weed infestation and efforts to harvest as thoroughly as possible, the threshed grain has a relatively large proportion of weed seeds, which in turn have a high moisture content.

Table 1

USSR: Progress in Harvesting of Grain Crops in 1973, Compared with 1970-72 Average

	1970-72 Average				1973			
	Total Area Threshed[1] (Thousand Hectares)		Proportion Threshed (Percent)		Total Area Threshed[1] (Thousand Hectares)		Proportion Threshed (Percent)	
	Per Period	Cumulative	Per Period	Cumulative	Per Period	Cumulative	Per Period	Cumulative
Before 10 Jul	4,262	4,262	3.8	3.8	3,682	3,682	3.1	3.1
10-16 Jul	6,335	10,597	5.6	9.4	4,488	8,170	3.8	6.9
17-23 Jul	9,320	19,917	8.2	17.6	7,437	15,607	6.3	13.2
24-30 Jul	9,513	29,430	8.4	26.0	7,893	23,500	6.7	19.9
31 Jul-6 Aug	11,044	40,474	9.8	35.8	12,300	35,800	10.4	30.3
7-13 Aug	9,840	50,314	8.7	44.4	12,050	47,850	10.2	40.6
Total	....	113,200	...	100.0	....	118,000	....	100.0

1. Including all pulses and grain, except corn, grown on state and collective farms. Excluding grain area sown on small plots by individuals and area sown on subsidiary farming enterprises operated by non-agricultural firms and organizations.

not as good as those that led to a record output in 1972. Overall, precipitation since April in the New Lands area of Kazakhstan and West Siberia has been about 15% above the long-term average. In parts of the southern portions of the New Lands, however, a lack of soil moisture persists after below normal precipitation during July. Moisture in other parts of the New Lands is more abundant. Because of this uneven distribution among regions both in soil moisture and in crop development, however, only an average to slightly below average yield is expected in the New Lands.

Outlook for Grain Production

7. If growing and harvesting conditions do not substantially deteriorate during the remainder of the season, the USSR's 1973 grain harvest is expected to be a record 155 million to 160 million tons of usable grain.[4] Attaining 160 million tons will require that harvest losses be only average in spite of the prevalence of lodged grain, that ideal weather prevails during the remainder of the harvest in the European USSR, and that the harvest east of the Urals be completed before frost and snow occur.

8. A harvest of 155 million tons will result if less than ideal conditions cause:

(a) direct harvesting losses from lodging of 10% to 15% on the area affected[5] and

(b) more than moderate losses from harvesting grain that is overripe because of delayed harvesting.

Continued harvesting problems in the European USSR or a delay in crop development east of the Urals could put the harvest below the lower end of this range. In addition, excess moisture and weediness of stored grain could result in a sharp reduction in availability of milling quality wheat.

4. The last record crop was achieved in 1970, when 150 million tons of usable grain was harvested. This range of usable grain output in conjunction with a long-run average rate of discount of 19% would imply an [footnotes continued on page 6]

Grain Imports

9. With a net usable grain crop of 155 million to 160 million tons, the Soviets will need to import 11 million to 16 million tons of grain in order to meet export requirements and domestic demand. If a large part of the crop is harvested wet and not dried properly, milling quality will be impaired and relatively more food grain imports will be required this year. Imports could rise above 16 million tons if world grain prices drop later this year and the Soviets decide to rebuild depleted stocks.

10. So far this year the USSR appears to have made new contracts for about 7 million tons of grain for delivery in FY 1974, of which more than 5 million tons will come from the United States. If purchases made last year that will be delivered in FY 1974 are added to this year's purchases, the amount of deliveries will total 11-1/2 million tons from all sources, including 9-3/4 million tons from the United States (see Table 3). However, to judge the size of grain imports associated with this year's harvest, planned deliveries this July and August must be subtracted while contracts made for delivery next July and August must be added. If these adjustments are made and if 160 million tons are harvested, the 9-1/2 million tons now scheduled for delivery by next August will almost fulfill import requirements. However, if the harvest is less than 160 million tons or if the Soviets decide to build grain reserves, additional imports will be required.

official claim of 191 million to 198 million tons. Larger than normal discounts may be in order for the 1973 crop (see Table 2).

5. Such losses are difficult to assess, however, and depend partly on the stage of the plants' development when lodging occurred, the type of harvesting method employed, and weather conditions during harvesting. The estimate of 10%-15% [redacted] should not be construed as a statistic from a probability distribution. For a more extensive discussion of losses associated with lodging, see the Appendix.

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Table 2

Grain Production in the USSR

	Official Claims of Gross Production[1] (Million Metric Tons)	CIA Estimate of Net Usable Grain Production (Million Metric Tons[2])	Percent Discount[3] from Gross Production
1966-70 annual average	168	134	20
1970	187	150	20
1971	181	148	18
1972	168	134	20
1973[4]	191-198 199-205	155-160	19 22

1. Bunker weight includes excess moisture and foreign matter.
2. CIA estimate of usable grain. Net usable grain is estimated as the gross output minus excess moisture, unripe and damaged kernels, weed seeds and other foreign matter, and post-harvest losses incurred in loading, unloading, and handling of grain between combines and storage facilities.
3. The reduction, or "discount," from official claims for gross output of grain to obtain net usable production, ranges between 14% in 1963 and 26% in 1960; the overall average is 19%.
4. A higher than normal discount may have to be applied to Soviet grain claims this year. As a result, official claims for the 1973 harvest may exceed the range of 191 million to 198 million tons implied by the previous average deduction. If, for example, this year's wet weather and excessive weediness leads to an estimated discount of 22%, the current estimate of 155 million to 160 million tons of usable grain would be consistent with a Soviet claim of 199 million to 205 million tons.

Table 3

Soviet Grain Purchases
Fiscal Years 1972-75

Million Metric Tons

Commodity and Origin	Bought for Delivery in FY 1972	FY 1973		FY 1974			FY 1975
		Bought	Of which: Shipped	Carry-over	New Purchases	Total	
Wheat	4.00	18.640	18.074	0.566	4.626	5.192	....
United States	....	11.000	10.449	0.551	3.126	3.677	....
Canada	3.00	5.000	5.000	....	1.500	1.500	....
Australia	0.50	1.000	1.000	....	....	....	....
France	0.50	0.670	0.670	....	....	....	....
Romania	....	0.500	0.500	....	....	....	....
Sweden	....	0.165	0.150	0.015	....	0.015	....
Syria	....	0.150	0.150	....	....	....	....
Argentina	....	0.150	0.150	....	....	....	....
Finland	....	0.005	0.005	....	....	....	....
Barley, rye, and oats	1.30	2.512	2.312	0.200	0.690	0.890	....
United States (barley)	0.80	0.020	0.020	....	0.140	0.140	....
United States (rye)	....	0.400	0.200	0.200	0.261	0.461	....
Canada (barley)	....	0.611	0.611	....	0.089	0.089	....
France (barley)	0.25	0.930	0.930	....	0.200	0.200	....
Sweden (rye and oats)	0.05	0.250	0.250	....	....	....	....
West Germany (rye)	0.15	0.240	0.240	....	....	....	....
Finland (barley and oats)	0.05	0.061	0.061	....	....	....	....

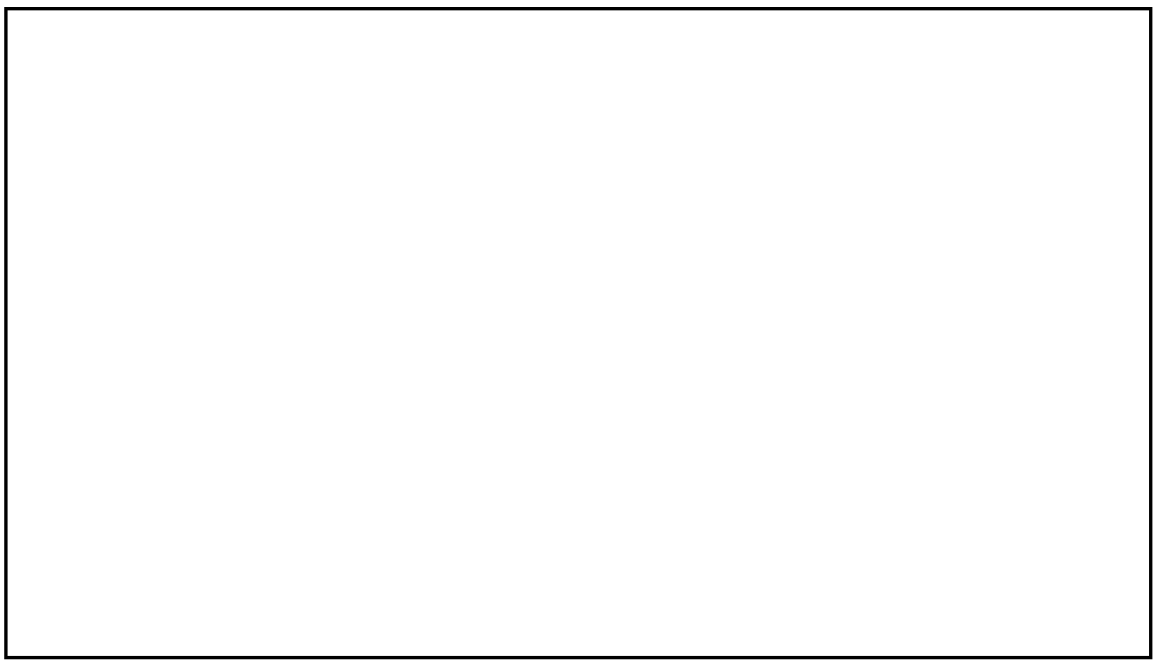
Table 3

Soviet Grain Purchases
Fiscal Years 1972-75
(Continued)

Million Metric Tons

Commodity and Origin	Bought for Delivery in FY 1972	FY 1973		FY 1974			FY 1975
		Bought	Of which: Shipped	Carry-over	New Purchases	Total	
Corn and grain sorghum	2.12	7.478	3.678	3.800	1.705	5.505	1.305
United States (corn)	1.96	7.200	3.400	3.800	1.705	5.505	1.305
South Africa (corn)	....	0.038	0.038	....	....	....	....
Hungary (corn)	....	0.100	0.100	....	....	....	....
Australia (sorghum)	....	0.070	0.070	....	....	....	....
Argentina (sorghum)	....	0.070	0.070	....	....	....	....
Others	0.16	....	....	....	....	....	....
Total	7.42	28.630	24.064	4.566	7.021	11.587	1.305
US summary							
Wheat	....	....	....	0.551	3.126	3.677	....
Barley	....	....	....	....	0.140	0.140	....
Rye	....	....	....	0.200	0.261	0.461	....
Corn	....	....	....	3.800	1.705	5.505	....
Total	....	....	....	*4.551*	*5.232*	*9.783*	....

11. In June, Soviet trade officials stated that they did not anticipate making further grain purchases from the United States through 1975. According to the Soviet Deputy Minister of Foreign Trade, this resulted from their concern over the adverse reaction in the United States to the massive Soviet grain purchases last year. Reportedly, they will attempt to satisfy their grain import requirements by purchases from Canada, Argentina, and unspecified sources. Recently, the Soviets have taken a more realistic stand, claiming that they will terminate purchases of US grain only temporarily to ease the pressure on the US market. Moreover, they have reduced the amount of corn already contracted for delivery this fiscal year by more than one million tons, moving delivery into FY 1975.



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Losses from Lodged Grain

Lodging describes a condition resulting when, because of rain and wind, grain stalks bend or break and form a flattened or tangled mass that is difficult to harvest. It generally occurs during the later stages of crop development -- when the grains are tallest and weighted down with mature heads -- and when plant growth has been especially lush. The extent of the losses associated with lodging depends partly on the stage of the plants' development when lodging occurs, the type of harvesting method employed, and weather conditions during harvesting.

If lodging occurs when the grain kernels are mature, the biological yield is already established, but the lodging will increase harvesting losses. In an immature plant, severe lodging interferes with photosynthesis and pollination. As a result, grain heads do not fill completely, and yields are reduced. Moreover, the matted grain is more susceptible to disease. If serious lodging occurs at a relatively early stage of crop development the resulting low yield may not warrant harvesting. On the other hand, some bending or arching, without breaking of the straw, may cause very little reduction in yields.

The severity of harvest losses depends both on the condition of the grain and on the extra care and effort put into the harvesting operations. If the straw leans slightly but in only one direction, it may be fairly easy to cut below the grain heads and bring them into the combine. On the other hand, if the heads are too low, or are lying on the ground, the straw may be cut off in two places, with the heads dropping to the ground instead of passing into the combine. A two stage method of harvesting, where the grain is cut and raked into swaths and then threshed at a later date, is slower than direct combining but generally preferable for lodged grain.

According to US experts, harvesting losses may amount to only 5%-10% if the weather turns favorable after lodging occurs and remains so until harvesting, providing there is not a weed problem. If weeds are present when the grain is cut, losses might amount to 10%-12%. If weeds are already a problem when lodging occurs, weather is unfavorable for harvesting, and rain falls on the grain lying in windrows, losses might easily be 15% or more. In this case, the degree of difficulty in harvesting and the persistence of the farmer in completing the harvest would determine the upper limit of the loss.

In addition to harvesting losses, grain quality also is affected by lodging, which interferes with the movement of air through the grain mass, impeding the drying rate. In many cases, in order to expedite the harvest, the grain must be threshed at a higher level of moisture. Unless the grain is properly dried before storage, spoilage will result, making breadgrain unsuitable for milling and, at times, impairing the value of all grains for livestock feed.